



(11) **EP 2 230 046 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
21.01.2015 Bulletin 2015/04

(51) Int Cl.:
B24B 23/02 (2006.01) **B24B 23/04** (2006.01)
B24B 45/00 (2006.01) **B24D 9/08** (2006.01)

(21) Application number: **09382216.1**

(22) Date of filing: **19.10.2009**

(54) **Sanding head adaptable to an angle grinder**

Schleifkopf, der für einen Winkelschleifer anpassbar ist

Tête de sablage adaptable sur une meuleuse angulaire

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK SM TR**

(30) Priority: **16.03.2009 ES 200900724**

(43) Date of publication of application:
22.09.2010 Bulletin 2010/38

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Description

Object of the Invention

[0001] The present invention relates to a head for a grinding machine of the type of those comprising an electric motor driving a threaded shaft in which there is assembled either a radial disk which can be used to cut several materials (iron, stone, wood, etc.) and also as a coarse sanding disk, which is locked by means of an outer nut which is tightened with a special wrench. It is also possible to assemble in said drive shaft a head like a conical plate, made of rubber or plastic, which screws into said shaft of the machine at the smaller base and has in its larger base, located outwardly, a sanding disk to adapt the grinding machine as an angle sander.

[0002] The head of the invention specifically relates to a head which allows easily assembling and disassembling sanding or polishing disks in a conventional grinding machine. This head has two well differentiated parts, on one hand a plate which on its rear face is provided with an end through which it screws into and is fixed to the shaft of the machine, whereas on its front face it is provided with a surface for contact mechanical attachment of a sanding disk, or formed by sanding sheets attached to one another, on the other hand, a replaceable sanding disk having on its rear face contact mechanical attachment means similar to those of the head and its active front face, or is formed by an abrasive sanding surface, or formed by several sanding disks attached to one another tangentially with respect to a radial plane of said disk, or by any other abrasive material.

Background of the Invention

[0003] Currently there are sanding plates which are assembled in a grinder formed by a single body in the form of a conical plate, which is coupled by screwing into the shaft of the machine, and which externally have the disk of abrasive material. There is also a solution in which the sanding disk is assembled by itself in the shaft of the grinder, locked by the traditional nut which is tightened from the rear or outer area.

[0004] Any of these solutions involves that, when it is necessary to change the sanding disk or the entire plate, it is necessary to unscrew either the locking nut or the entire plate from the shaft of the machine and place the new one again.

[0005] In addition, both individual sanding disks and sanding plates have a planar operative surface, which poses problems when treating rounded surfaces since the disk wears in a nonuniform manner, in addition to causing vibrations in the shaft of the machine which make the task of the operator difficult and end up rendering the machine useless.

Description of the Invention

[0006] The object of the present invention is a sanding head adaptable to an orbital grinder, having a plate which on its rear face has a cylindrical end, generally provided with two planar cuts defining respective parallel faces forming a drive means by a conventional wrench applied on said planar faces. It internally incorporates a nut or defines a threaded cavity into which it screws and is fixed to the shaft of the grinding machine.

[0007] This plate has on its front face, opposite that through which it is fixed to the grinder, a considerably planar discoid surface forming the contact mechanical attachment means for a sanding disk or formed by several sanding sheets attached to one another according to inclined diametric planes. For this purpose, the sanding disk has on its rear face, opposite the machine, contact mechanical attachment means similar to those existing in the head, forming between both an attachment system through Velcro-type hooks and loops.

[0008] According to an important feature of the invention, the plate coupled in the shaft of the machine likewise has an axial protrusion directed towards the front face and reaches a sufficient height to be located inside a hole existing in the center of the sanding disk, in which it is adapted. This protrusion allows centering and securing the disk with the aforementioned single Velcro-type means.

[0009] The sanding disk is a disk with a conventional configuration which is either formed by a sanding surface or by sanding sheets attached to one another according to inclined diametric planes, or by any other abrasive material. This disk can be planar or can have on its active face, the one opposite the grinder, a certain tapering in which the larger base coincides with the front face opposite the machine. In any of the cases, in a preferred embodiment, the center of the sanding disk is recessed towards the rear face which is provided with the Velcro for attachment with the plate, like the latter; the coupling between the axial protrusion of the plate and the central hole of the sanding disk is thus performed in a plane located at the rear part, towards the machine, with respect to the work plane or active area of the sanding disk, so that it does not interfere with the surface of the abrasive and does not affect the coupling in any work circumstance.

[0010] Document US 6 059 644 discloses a sanding head adaptable to an orbital grinder, having a plate provided with a threaded end which permits into which it screws to the machine, and on its front face, opposite to that through which it is fixed to the grinder, a discoid surface through which a sanding disc is fixed by means of a Velcro-type. Frontally the plate has a canal that contacts to the rear face through several holes (40) which function is to collect the dust produced on having sanded. There is not disclosed any type of mechanism to centre the sanding disc in the head plate, since there is not any type of axial protrusion in the centre of the plate that sticks

out through the inner of a hole presents in the centre of the sanding disk, among other causes as it is completely plain. Either it is appreciated in the centre of the plate a recessed area towards the rear face corresponding to the central recessed area existing in said plate, the coupling between the axial protrusion of the plate and the central hole of the sanding disk being performed in a plane located at the rear part, towards the machine, of the work plane or active area of the sanding disk as it is described in the present document.

Description of the Drawings

[0011] To complement the description which is being made and for the purpose of aiding to better understand the features of the invention, a set of drawings is attached to this specification, in which the following has been depicted with an illustrative and non-limiting character:

Figure 1 shows a cross-sectional view of the sanding head adapted in a grinding machine (3).

Figure 2 shows a cross-sectional view of a head with a sanding disk (2b) formed in this case by multiple sanding sheets placed against one another and inclined with respect to a plane diametric to said disk.

Figure 3 depicts a cross-section of a sanding disk (2c).

Preferred Embodiment of the Invention

[0012] As can be observed in the mentioned figures, the sanding head of the invention allows adapting disks (2) of an abrasive material, preferably sanding material, whether it is a single element as shown in Figure 1, or formed by several sheets (24) attached to one another according to inclined diametric planes, as seen in Figure 2, to a grinding machine in a quick and simple manner, for which the head is formed by two parts (1) and (2) which are attached to one another by means of Velcro-type loop and hook system.

[0013] The part (1), referred to as plate throughout this specification, has a central protrusion (11) on the face opposite the grinder (3), which internally includes a threaded surface or an embedded nut (12) through which this part is locked in the screw (31) forming the shaft of the machine. On its front face this plate has a surface (14) of hooks or loops which must be similar to the surface (21) existing in the replaceable disk (2). In the central area and on the front face it has a protrusion (15) projecting slightly through the central hole (22) of the disk (2), said protrusion performing a locking task, while at the same time it allows easily centering the disk (2) with respect to the plate (1). This central area (13) is recessed so that the coupling between the disk (2) and the plate (1) through the hole (22) and the protrusion (15) is performed in a plane closer to the machine (3) than the active surface (23) of the disk (2).

[0014] The part (2) is in turn an abrasive sanding disk,

similar to any conventional disk. This disk has a rear surface (21) of loops or hooks, depending on the one existing in the plate (1) indicated with reference number (14). The front surface (23) of this disk (2) is formed by a single sanding body or by several sheets (24) located in an inclined manner with respect to the plane defining said operative face (23). The hole (22) is in turn located in a recess (25) towards the rear face opposite the plate (1), for the reasons mentioned above.

[0015] As seen in Figure 2, in this case the disk (2) has an active face (23) provided with a certain tapering, its larger base being located towards the rear face and the smaller base towards the center of the active face. This shape allows working in non-planar surfaces with a more uniform wear of the sanding disk (2), since this shape is better adapted on any surface without the tool therefore vibrating with use, as occurs with conventional disks.

[0016] Having sufficiently described the nature of the invention, as well as a preferred embodiment, it is stated for the relevant purposes that the materials, shape, size and arrangement of the described elements can be modified, provided that this does not involve an alteration of the essential features of the invention which are claimed below:

Claims

1. A sanding head with a sanding disk, wherein the sanding head is adaptable to an orbital grinder, having a plate (1) provided on its rear face with an end (11) incorporating an inner threaded area (12) into which it screws and is fixed to the shaft (31) of the machine (3), said plate (1) has on its front face, opposite to that through which it is fixed to the grinder, a peripheral discoid surface (14) forming the contact mechanical attachment means for a sanding disk (2) having on its rear face, opposite the machine, contact mechanical attachment means (21) similar to those existing in the head (14), both of them formed by a Velcro-type hook and loop system; **characterized in that** said plate (1) likewise has, in the center of said front face, an axial protrusion (15) located in a sunken area (13) towards the rear face, which is provided with the mechanical attachment means (21); whereas the sanding disk (2) presents a central hole (22) and a recessed area (25) towards the rear face opposite the plate (1), which in the coupling with the plate (1) is located inside a sunken central area (13) existing in said plate, the coupling between the axial protrusion (15) of the plate (1) and the central hole (22) of the sanding disk (2) being performed in a plane located at the rear part, towards the machine, of the work plane or active area (23) of the sanding disk (2).
2. The sanding head with a sanding disk according to claim 1, **characterized in that** the active or rear face

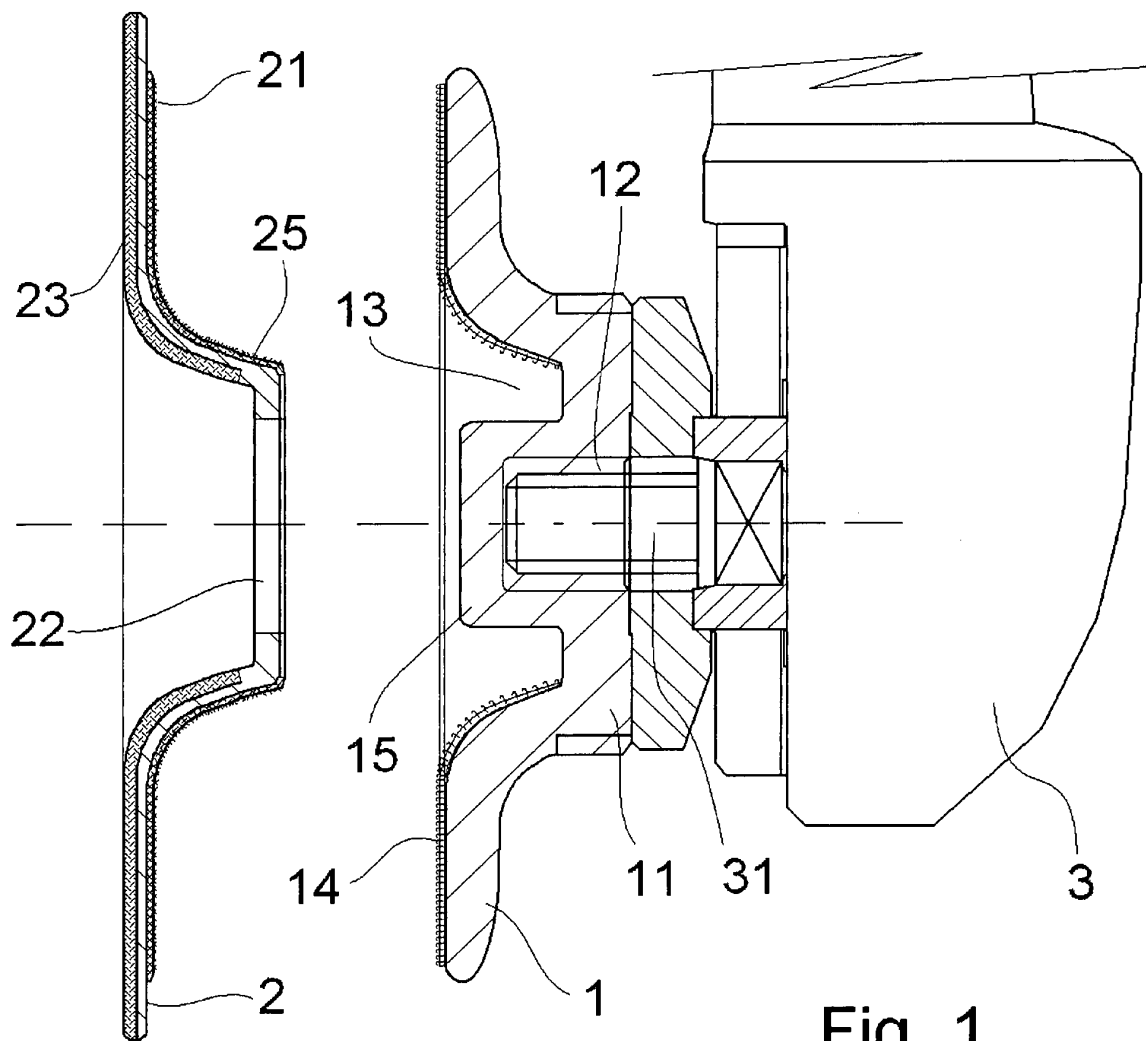
(23) of the disk (2), formed by a sanding surface or formed by sanding sheets (24) attached to one another and inclined with respect to the plane defining said rear face, has a certain tapering, with its larger case coinciding with the rear face opposite the machine.

Patentansprüche

1. Schleifkopf mit einer Schleifscheibe, wobei der Schleifkopf anpassbar an eine Orbitalschleifmaschine ist, mit einer an seiner Rückseite vorgesehenen Platte (1), mit einem ein Innengewindebereich (12) aufweisenden Ende (11), in welches er eingeschraubt und an die Welle (31) der Maschine (3) befestigt ist, und die besagte Platte (1) hat an ihrer Vorderseite, entgegengesetzt der, mittels welcher sie an die Schleifmaschine befestigt ist, eine periphere scheibenförmige Oberfläche (14), welche die mechanischen Verbindungsbefestigungsmittel für eine Schleifscheibe (2), bildet, mit mechanischen Verbindungsbefestigungsmitteln (21), ähnlich derer im Kopf (14) vorhandenen, beide durch einen Klettverschluss ähnlichen Klettsystems, an dessen der Maschine abgewandten Rückseite, gebildet; **dadurch gekennzeichnet, dass** die besagte Platte (1) in der Mitte dieser Vorderseite ebenfalls einen axialen Vorsprung (15), der sich in einem vertieften Bereich (13) in Richtung der Rückseite befindet, an dem die mechanischen Verbindungsbefestigungsmittel (21) vorgesehen sind, hat; wohingegen die Schleifscheibe (2) eine zentrale Bohrung (22) und einen eingeschnittenen Bereich (25) in Richtung der der Platte (1) abgewandten Rückseite, aufweist, welche sich bei der Kopplung mit der Platte (1), im Inneren eines in dieser Platte vorhanden vertieften zentralen Bereiches (13), befindet, wobei die Kopplung zwischen dem axialen Vorsprung (15) der Platte (1) und der zentralen Bohrung (22) der Schleifscheibe (2) in einer im hinteren Teil, in Richtung der Maschine angeordneten Ebene der Arbeitsebene oder des aktiven Bereiches (23) der Schleifscheibe (2), durchgeführt wird.
2. Schleifkopf mit einer Schleifscheibe nach Anspruch 1, **dadurch gekennzeichnet, dass** die aktive oder Rückseite (23) der Scheibe (2), durch eine Schleiffläche geformt oder durch aneinander befestigte und gegenüber der diese Rückseite definierenden Ebene geneigten Schleifblätter (24) geformt, eine gewisse Verjüngung aufweist, wobei ihre größte Grundfläche mit der der Maschine gegenüberliegenden Rückseite, übereinstimmt.

Revendications

1. Une tête de ponçage avec un disque de ponçage, dans lequel la tête de ponçage est adaptable à une ponceuse orbitale, ayant une plaque (1) pourvue sur sa face arrière avec une extrémité (11) incorporant une section filetée interne (12) dans laquelle elle est vissée et fixée à l'arbre (31) de la machine (3), ladite plaque (1) a sur sa face avant, à l'opposé et à travers de laquelle elle est fixée à la ponceuse, une surface périphérique discoïde (14) formant les moyens d'assemblage mécanique de contact pour un disque de ponçage (2) ayant sur sa face arrière, opposée à la machine, des moyens d'assemblage mécanique de contact (21) similaires à ceux qui se trouvent dans la tête (14), tous les deux formés par un système à boucles et crochets du type Velcro ; **caractérisée en ce que** ladite plaque (1) a de même, dans le centre de ladite face avant, une saillie axiale (15) située dans une section affaissée (13) vers la face arrière, qui est pourvue des moyens d'assemblage mécanique de contact (21) ; alors que le disque de ponçage (2) présente un trou central (22) et une section en retrait (25) vers la face arrière opposée à la plaque (1), qui dans l'accouplement avec la plaque (1) est située à l'intérieur d'une section centrale affaissée (13) existante dans ladite plaque, l'accouplement entre la saillie axiale (15) de la plaque (1) et le trou central (22) du disque de ponçage (2) étant opéré sur un plan situé sur la partie arrière, vers la machine, du plan de travail ou de la section active (23) du disque de ponçage (2).
2. La tête de ponçage avec un disque de ponçage selon la revendication 1, **caractérisée en ce que** la face active ou arrière (23) du disque (2), formée par une surface de ponçage ou formée par des feuilles de ponçage (24) attachées l'une à l'autre et inclinées par rapport au plan définissant ladite face arrière, a une certaine forme conique, avec son plus grand boîtier coïncidant avec la face arrière opposée à la machine.



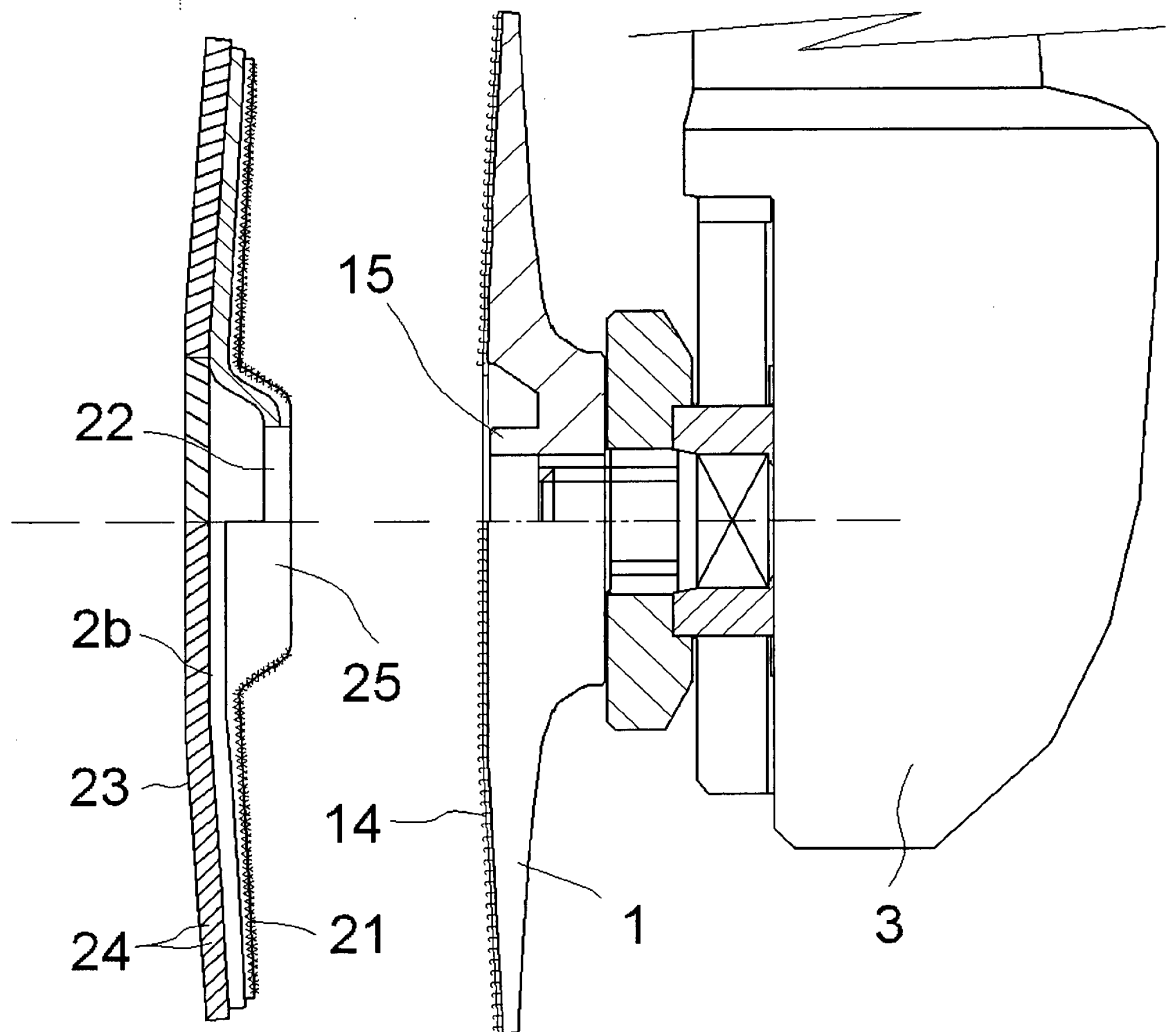


Fig. 2

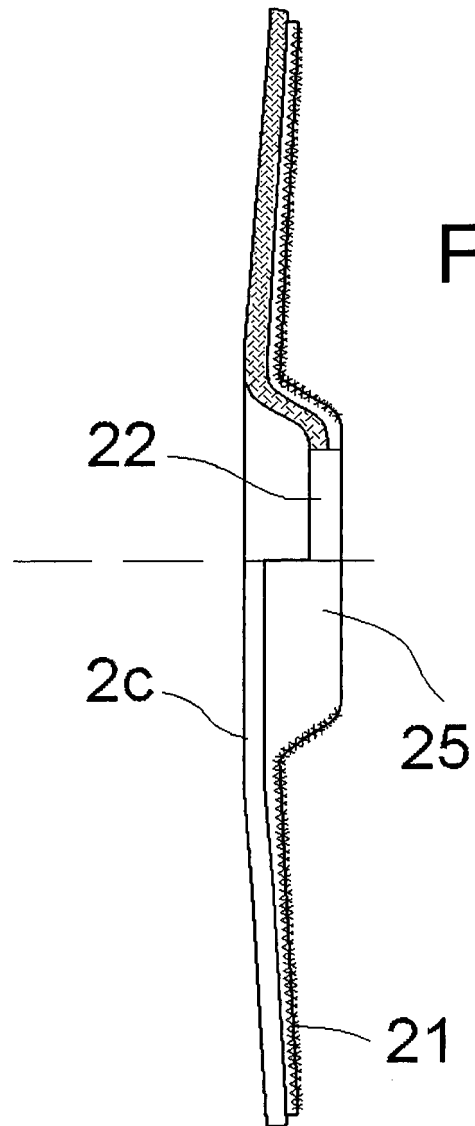


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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